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NATA

Client:
LumCAT: 4-1966-M
Luminaire:
Report No: GC2019031803
Test No: GC2019041617
LampCAT: XICATO XTM LES9MM
Lamp flux(lm): 458.0
Number of Lamps: 1
Length(mm): 0
Phm Type: C

Voltage(V):
Current(A):
Power (W): 8.5680
PF:
Ballast type:
Width(mm): 0
Height(mm): 0

Photometric Results

Lumens(lm): 410.58, Efficiency(%): 89.65% , Luminous Efficacy(lm/W): 47.92
Central intensity(cd): 9871.594, Maximum intensity(cd): 9871.594
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=8.0
[C90/270]Total=8.0
Field angle(10%Imax): [C0/180]Total=14.8
[C90/270]Total=14.8
Maximum s/h(1/2): C0_180=0.14 C90_270=0.14
Maximum s/h(1/4): C0_180=0.14 C90_270=0.14
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 89.65%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.908%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	9871.594	0.000	0	.000%	.000%
1.0	9483.680	9.261	9.261	2.022%	2.256%
2.0	8320.641	25.554	34.816	5.580%	8.480%
3.0	6620.555	35.734	70.55	7.802%	17.183%
4.0	4910.555	38.598	109.148	8.428%	26.584%
5.0	3252.178	35.116	144.264	7.667%	35.137%
6.0	2069.804	27.968	172.232	6.107%	41.949%
7.0	1192.268	20.248	192.48	4.421%	46.880%
8.0	735.061	13.794	206.274	3.012%	50.240%
9.0	475.481	9.811	216.084	2.142%	52.629%
10.0	336.874	7.352	223.436	1.605%	54.420%
11.0	264.635	6.010	229.446	1.312%	55.883%
12.0	221.900	5.319	234.765	1.161%	57.179%
13.0	195.673	4.956	239.72	1.082%	58.386%
14.0	182.763	4.844	244.564	1.058%	59.566%
15.0	175.683	4.921	249.485	1.074%	60.764%
16.0	170.895	5.078	254.563	1.109%	62.001%
17.0	167.611	5.271	259.835	1.151%	63.285%
18.0	164.644	5.478	265.313	1.196%	64.619%
19.0	162.085	5.684	270.997	1.241%	66.004%
20.0	159.652	5.889	276.886	1.286%	67.438%
21.0	157.310	6.086	282.972	1.329%	68.920%
22.0	155.194	6.280	289.252	1.371%	70.450%
23.0	153.232	6.472	295.724	1.413%	72.026%
24.0	151.264	6.657	302.381	1.454%	73.647%
25.0	149.309	6.834	309.216	1.492%	75.312%
26.0	147.558	7.008	316.223	1.530%	77.019%
27.0	145.632	7.173	323.396	1.566%	78.766%
28.0	143.803	7.328	330.724	1.600%	80.551%
29.0	141.884	7.474	338.198	1.632%	82.371%
30.0	140.049	7.612	345.811	1.662%	84.225%
31.0	138.087	7.740	353.551	1.690%	86.110%
32.0	135.999	7.852	361.403	1.714%	88.023%
33.0	133.910	7.952	369.354	1.736%	89.959%
34.0	129.066	7.958	377.313	1.738%	91.898%
35.0	116.409	7.624	384.936	1.665%	93.754%
36.0	93.122	6.672	391.608	1.457%	95.379%
37.0	64.653	5.146	396.754	1.124%	96.633%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	35.522	3.344	400.097	.730%	97.447%
39.0	14.927	1.722	401.819	.376%	97.866%
40.0	6.828	0.759	402.578	.166%	98.051%
41.0	4.212	0.393	402.971	.086%	98.147%
42.0	3.783	0.290	403.262	.063%	98.218%
43.0	3.157	0.257	403.519	.056%	98.280%
44.0	2.440	0.211	403.73	.046%	98.332%
45.0	2.039	0.172	403.902	.038%	98.374%
46.0	1.948	0.156	404.058	.034%	98.412%
47.0	1.870	0.152	404.21	.033%	98.449%
48.0	1.828	0.150	404.359	.033%	98.485%
49.0	1.779	0.148	404.508	.032%	98.521%
50.0	1.730	0.146	404.654	.032%	98.557%
51.0	1.716	0.146	404.8	.032%	98.592%
52.0	1.674	0.145	404.945	.032%	98.628%
53.0	1.645	0.144	405.089	.032%	98.663%
54.0	1.624	0.144	405.234	.031%	98.698%
55.0	1.596	0.144	405.377	.031%	98.733%
56.0	1.582	0.144	405.521	.031%	98.768%
57.0	1.575	0.144	405.665	.032%	98.803%
58.0	1.533	0.144	405.809	.031%	98.838%
59.0	1.526	0.143	405.952	.031%	98.873%
60.0	1.519	0.144	406.096	.031%	98.908%
61.0	1.512	0.145	406.24	.032%	98.943%
62.0	1.498	0.145	406.386	.032%	98.978%
63.0	1.484	0.145	406.531	.032%	99.014%
64.0	1.477	0.145	406.676	.032%	99.049%
65.0	1.456	0.145	406.821	.032%	99.085%
66.0	1.470	0.146	406.967	.032%	99.120%
67.0	1.463	0.147	407.114	.032%	99.156%
68.0	1.463	0.148	407.263	.032%	99.192%
69.0	1.442	0.148	407.411	.032%	99.228%
70.0	1.442	0.148	407.559	.032%	99.264%
71.0	1.420	0.148	407.707	.032%	99.300%
72.0	1.420	0.148	407.855	.032%	99.336%
73.0	1.427	0.149	408.003	.033%	99.373%
74.0	1.427	0.150	408.154	.033%	99.409%
75.0	1.413	0.150	408.304	.033%	99.446%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	1.406	0.150	408.453	.033%	99.482%
77.0	1.406	0.150	408.603	.033%	99.519%
78.0	1.406	0.151	408.754	.033%	99.555%
79.0	1.406	0.151	408.905	.033%	99.592%
80.0	1.406	0.152	409.056	.033%	99.629%
81.0	1.406	0.152	409.208	.033%	99.666%
82.0	1.406	0.152	409.361	.033%	99.703%
83.0	1.399	0.152	409.513	.033%	99.740%
84.0	1.399	0.152	409.666	.033%	99.777%
85.0	1.399	0.153	409.819	.033%	99.815%
86.0	1.406	0.153	409.972	.033%	99.852%
87.0	1.392	0.153	410.125	.033%	99.889%
88.0	1.378	0.152	410.277	.033%	99.926%
89.0	1.378	0.151	410.428	.033%	99.963%
90.0	1.392	0.152	410.58	.033%	100.000%

Zonal flux distribution table

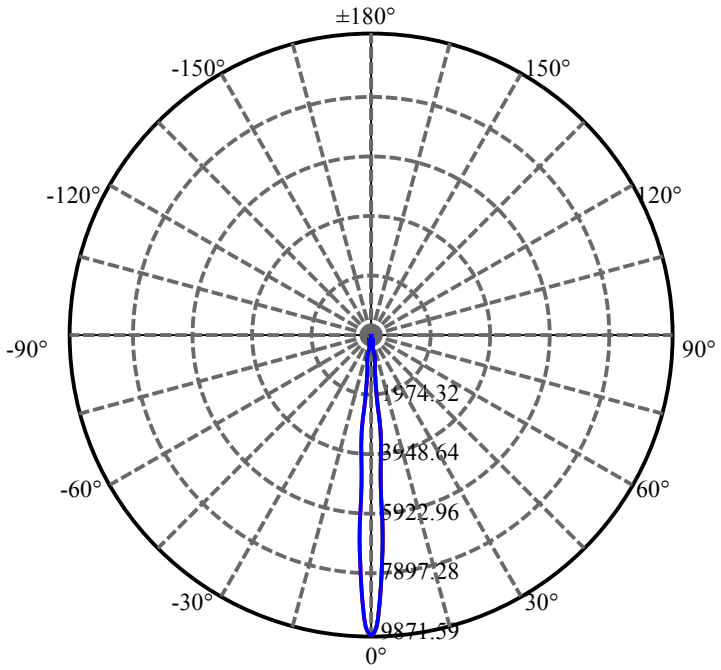
ZONAL LUMEN SUMMARY

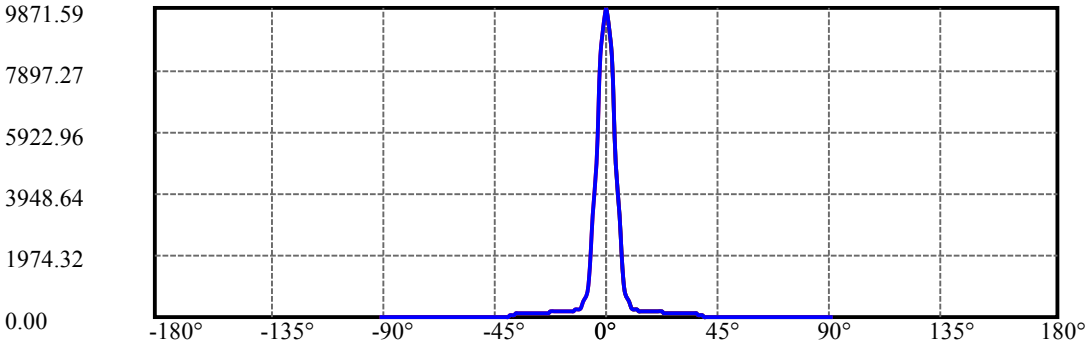
Zone	Lumens	%Lamp	%Fixt
0-30	345.81	75.50%	84.22%
0-40	402.58	87.90%	98.05%
0-60	406.10	88.67%	98.91%
0-90	410.43	89.61%	99.96%
0-120	410.43	89.61%	99.96%
0-180	410.58	89.65%	100.00%
60-90	4.48	0.98%	1.09%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-27.69	328.46	71.72%	80.00%

ZONAL LUMEN SUMMARY

0-10	223.44
10-20	53.45
20-30	68.92
30-40	56.77
40-50	2.08
50-60	1.44
60-70	1.46
70-80	1.50
80-90	1.37
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

Light Distribution Curve [Unit:cd]





C0(Max):

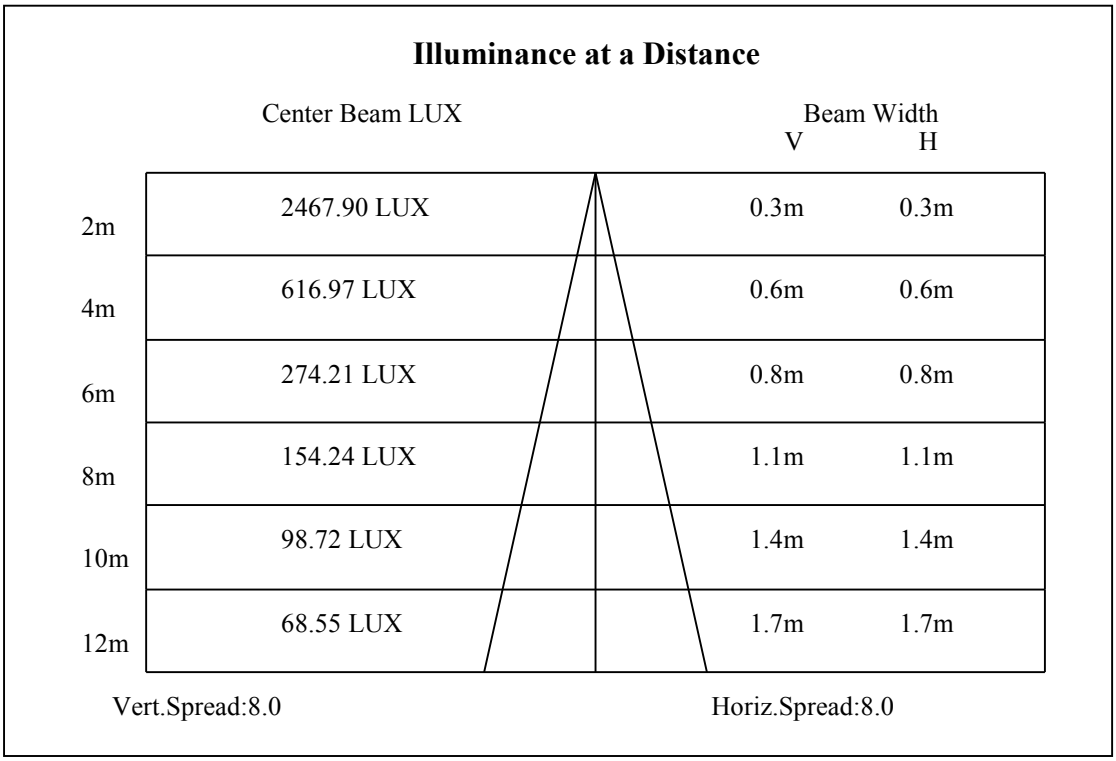
C0/C180:

C90/C270:

Field angle(10%Imax):C0/180Left:7.4 Right:7.4
:C90/270Left:7.4 Right:7.4

Beam Angle(50%Imax):C0/180Left:4.0 Right:4.0
:C90/270Left:4.0 Right:4.0

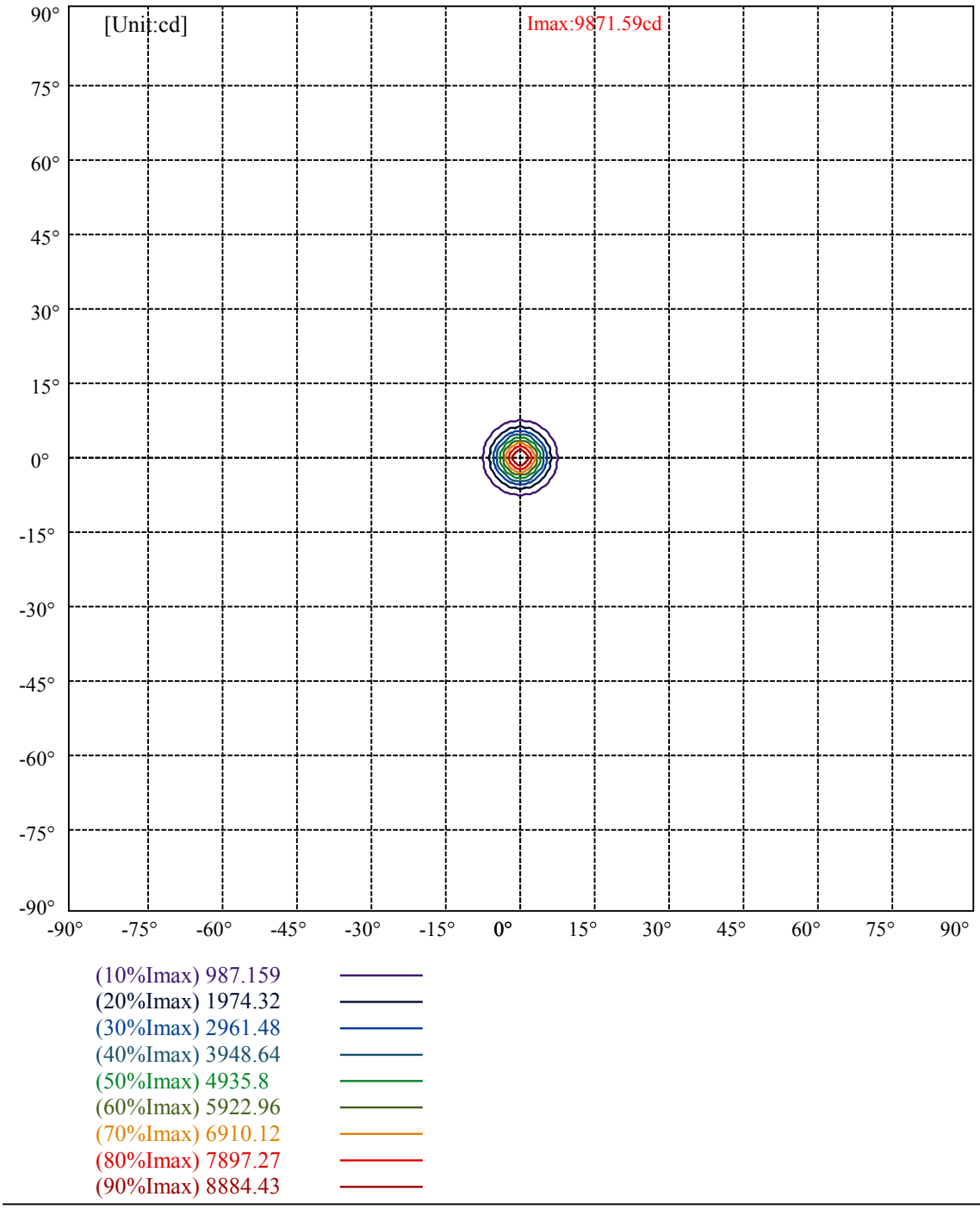
Lux distance Curve



Equipment: 123 Date: 2019/4/16 Operator: 234

Temperature(°C): 345 Humidity(%): 456%

ISO-Intensity(V-H)

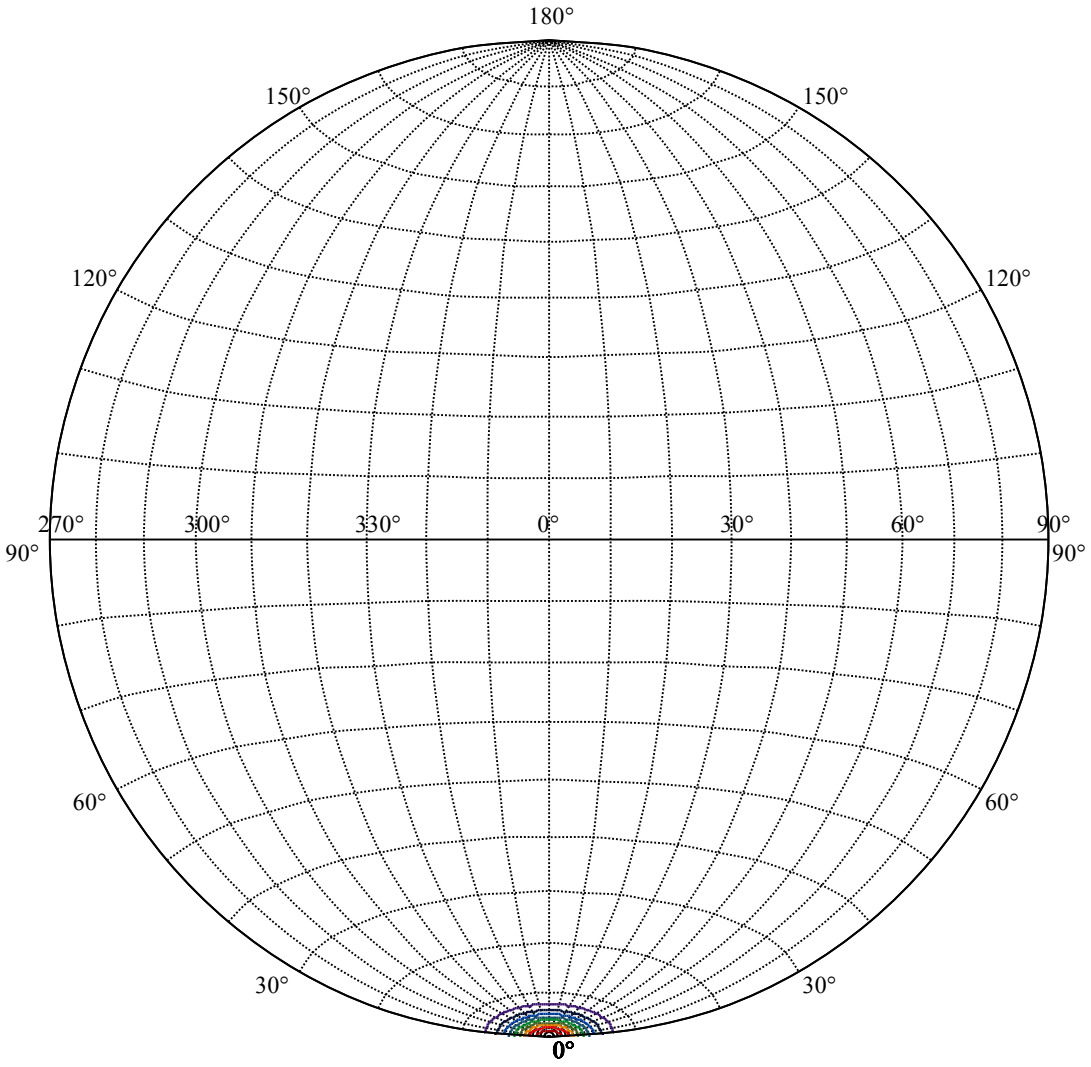


Equipment: 123
Temperature(°C): 345

Date: 2019/4/16
Humidity(%): 456%

Operator: 234

ISO candela diagram on circular web



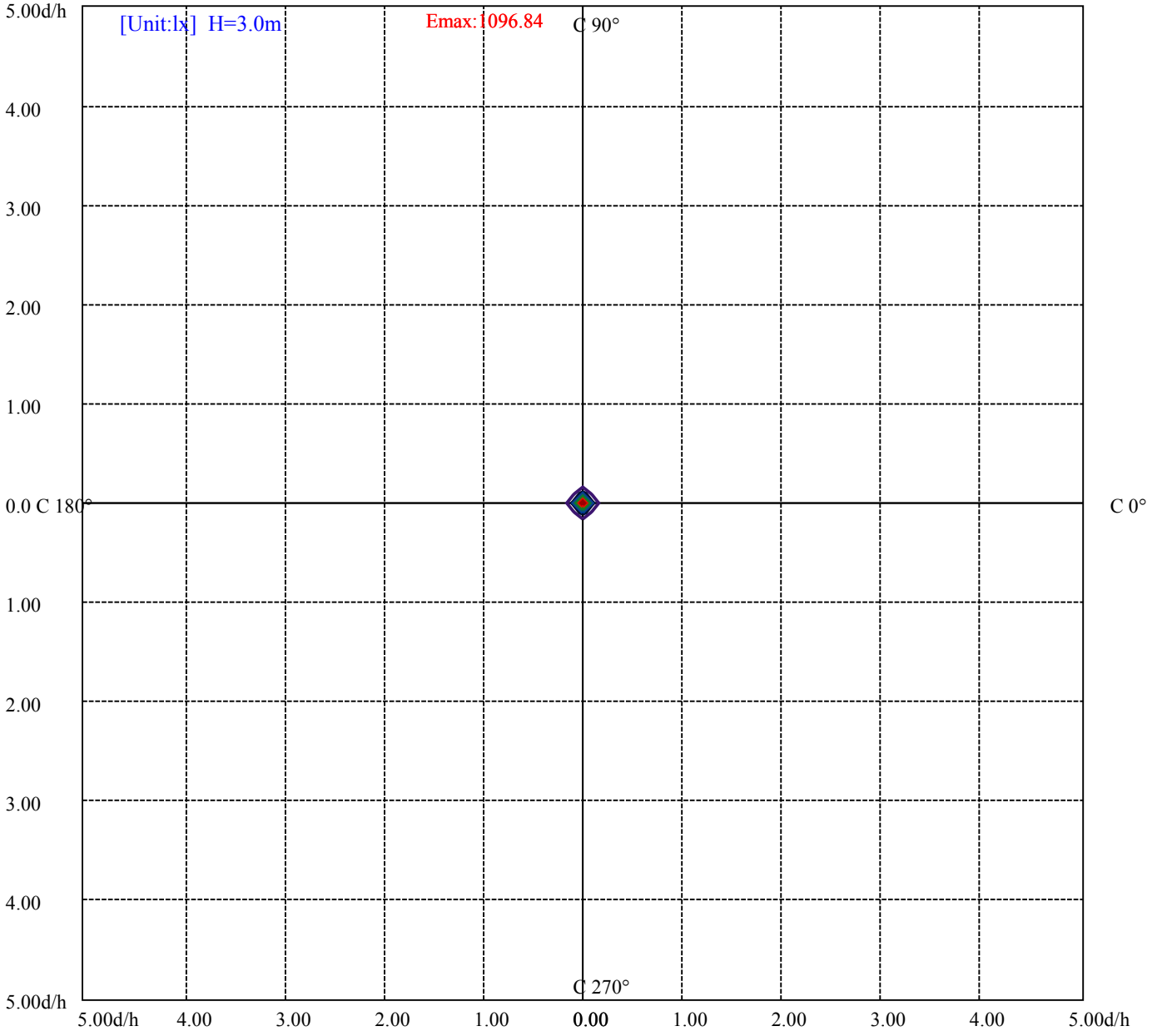
House [Unit:cd] Road

Imax:9871.59

(10%Imax) 987.159
(20%Imax) 1974.32
(30%Imax) 2961.48
(40%Imax) 3948.64
(50%Imax) 4935.8
(60%Imax) 5922.96
(70%Imax) 6910.12
(80%Imax) 7897.27
(90%Imax) 8884.43

Equipment: 123 Date: 2019/4/16 Operator: 234
Temperature(°C): 345 Humidity(%): 456%

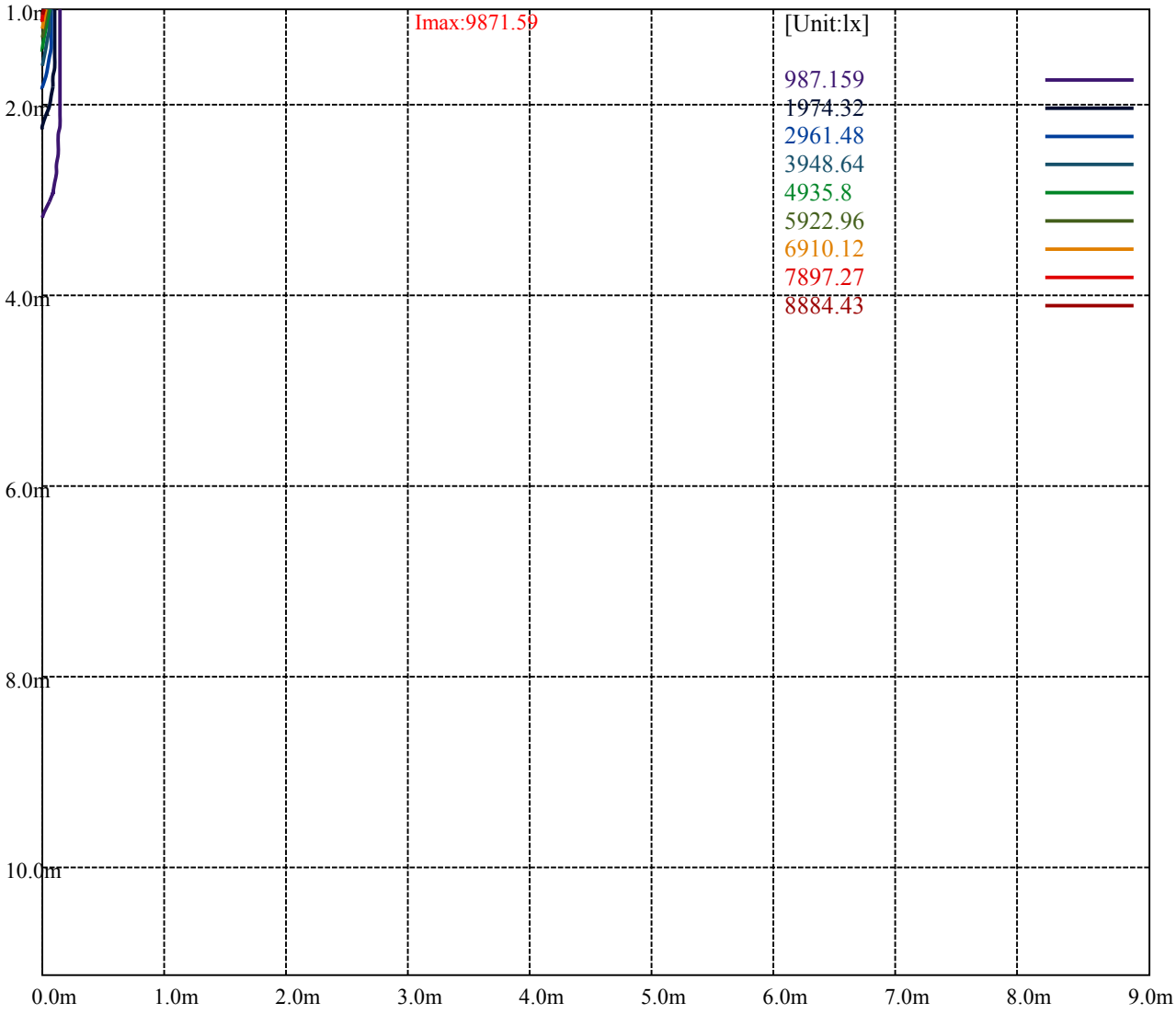
ISO illuminance diagram



Equipment: 123 Date: 2019/4/16 Operator: 234

Temperature(°C): 345 Humidity(%): 456%

Space ISO Lux diagram



Equipment: 123
Temperature(°C): 345

Date: 2019/4/16
Humidity(%): 456%

Operator: 234

Luminance Limitting Curve(no luminous side)

Luminance Table

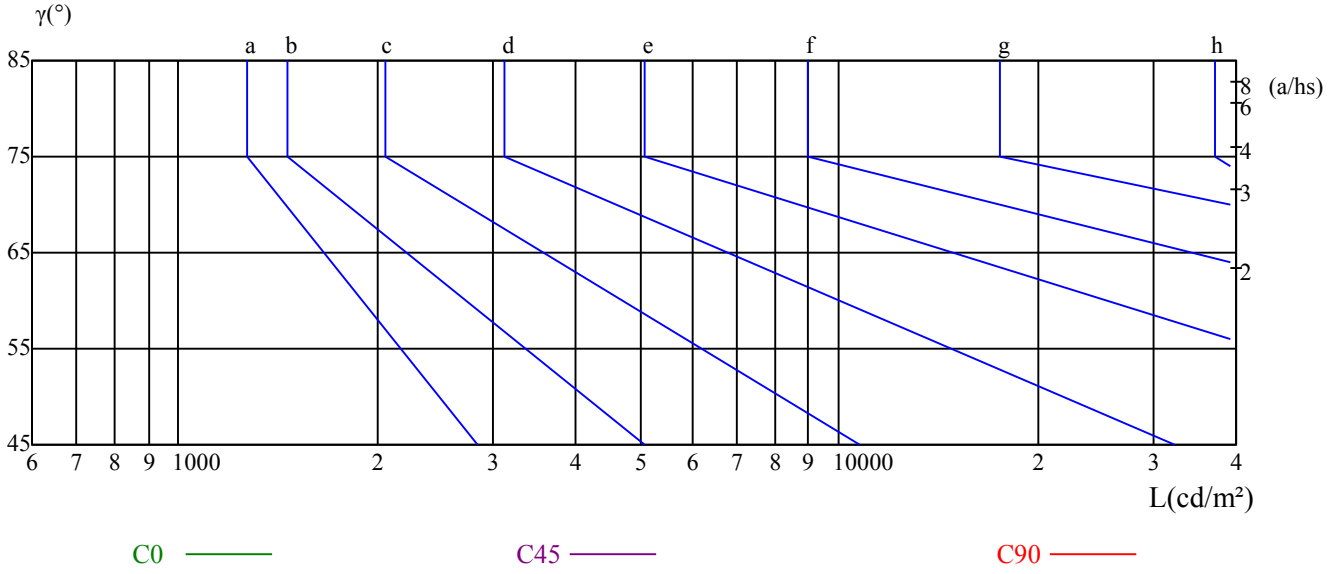
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

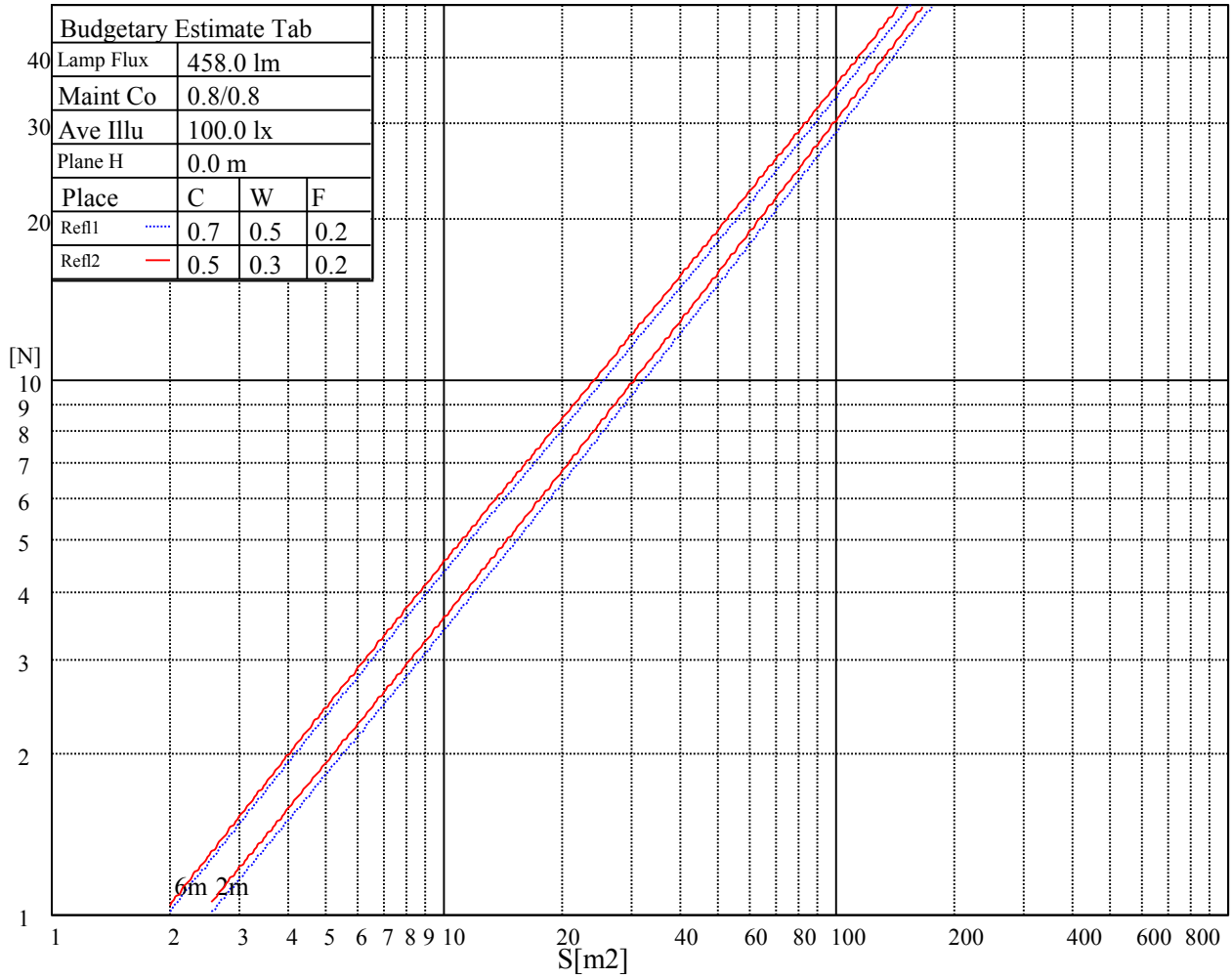
Glare Table

Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

Luminance Limitting Curve



Budgetary Estimate Table

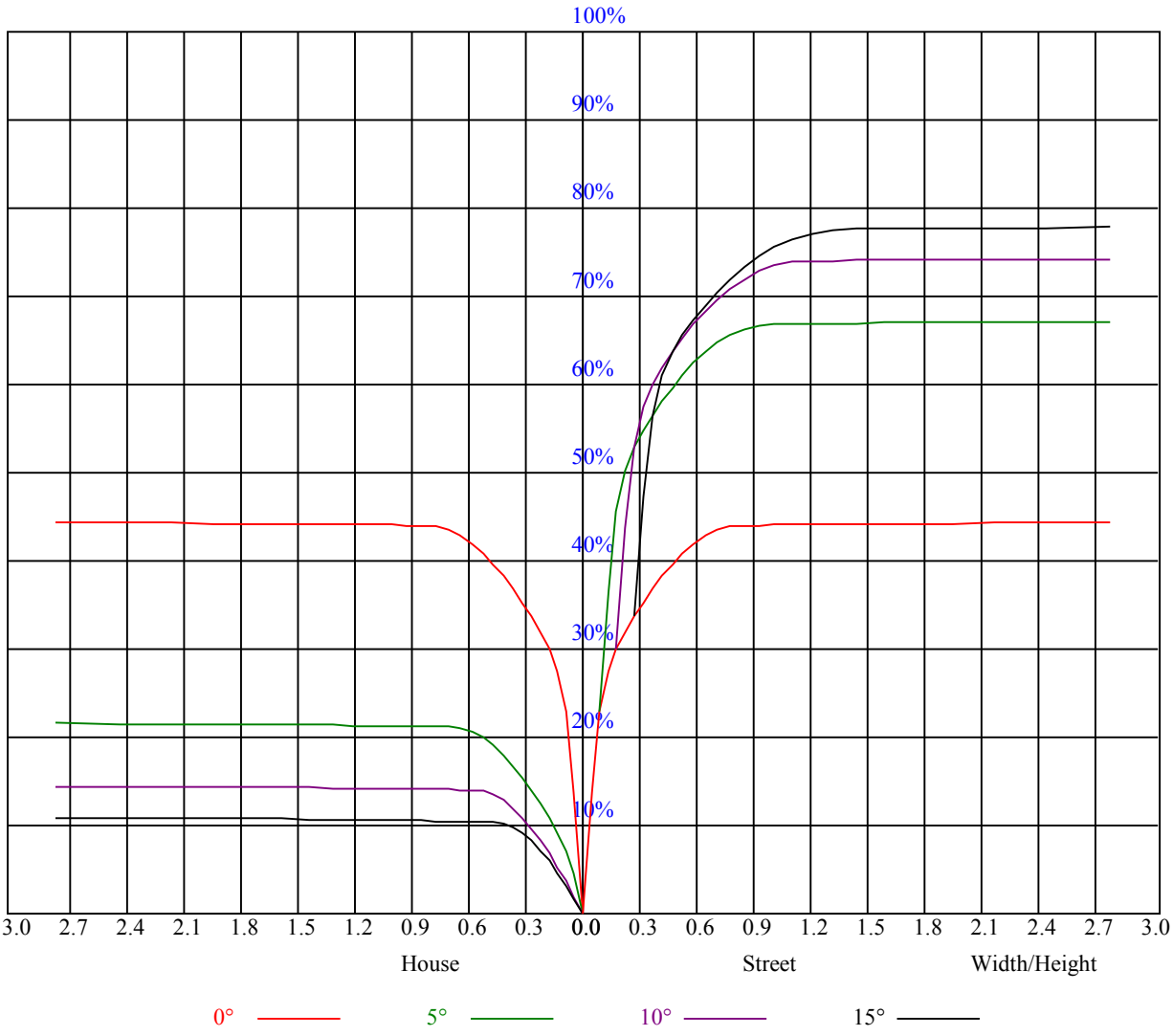


Equipment: 123 Date: 2019/4/16 Operator: 234
Temperature(°C): 345 Humidity(%): 456%

Utilization factor table for indoor luminaire

RHOCC	80			70			50			30			10			0
RHOW	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR	COEFFCIENTS OF UTILIZATION RHOFC=20 CU															
0	1.07	1.07	1.07	1.04	1.04	1.04	1.00	1.00	1.00	0.95	0.95	0.95	0.91	0.91	0.91	0.90
1	1.01	0.99	0.98	0.99	0.98	0.96	0.96	0.94	0.93	0.92	0.91	0.90	0.89	0.89	0.88	0.86
2	0.96	0.93	0.91	0.95	0.92	0.90	0.92	0.90	0.88	0.89	0.88	0.86	0.87	0.86	0.85	0.83
3	0.92	0.89	0.86	0.91	0.88	0.86	0.89	0.86	0.84	0.87	0.85	0.83	0.85	0.83	0.82	0.81
4	0.89	0.85	0.82	0.88	0.84	0.82	0.86	0.83	0.81	0.84	0.82	0.80	0.83	0.81	0.79	0.78
5	0.85	0.82	0.79	0.85	0.81	0.79	0.83	0.80	0.78	0.82	0.79	0.77	0.81	0.78	0.77	0.76
6	0.83	0.79	0.76	0.82	0.78	0.76	0.81	0.78	0.75	0.80	0.77	0.75	0.79	0.76	0.75	0.74
7	0.80	0.76	0.74	0.80	0.76	0.74	0.79	0.76	0.73	0.78	0.75	0.73	0.77	0.74	0.73	0.72
8	0.78	0.74	0.72	0.77	0.74	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.75	0.73	0.71	0.70
9	0.76	0.72	0.70	0.76	0.72	0.70	0.75	0.72	0.70	0.74	0.71	0.69	0.74	0.71	0.69	0.68
10	0.74	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.68	0.73	0.70	0.68	0.72	0.70	0.68	0.67

Coefficient Utilization Curve

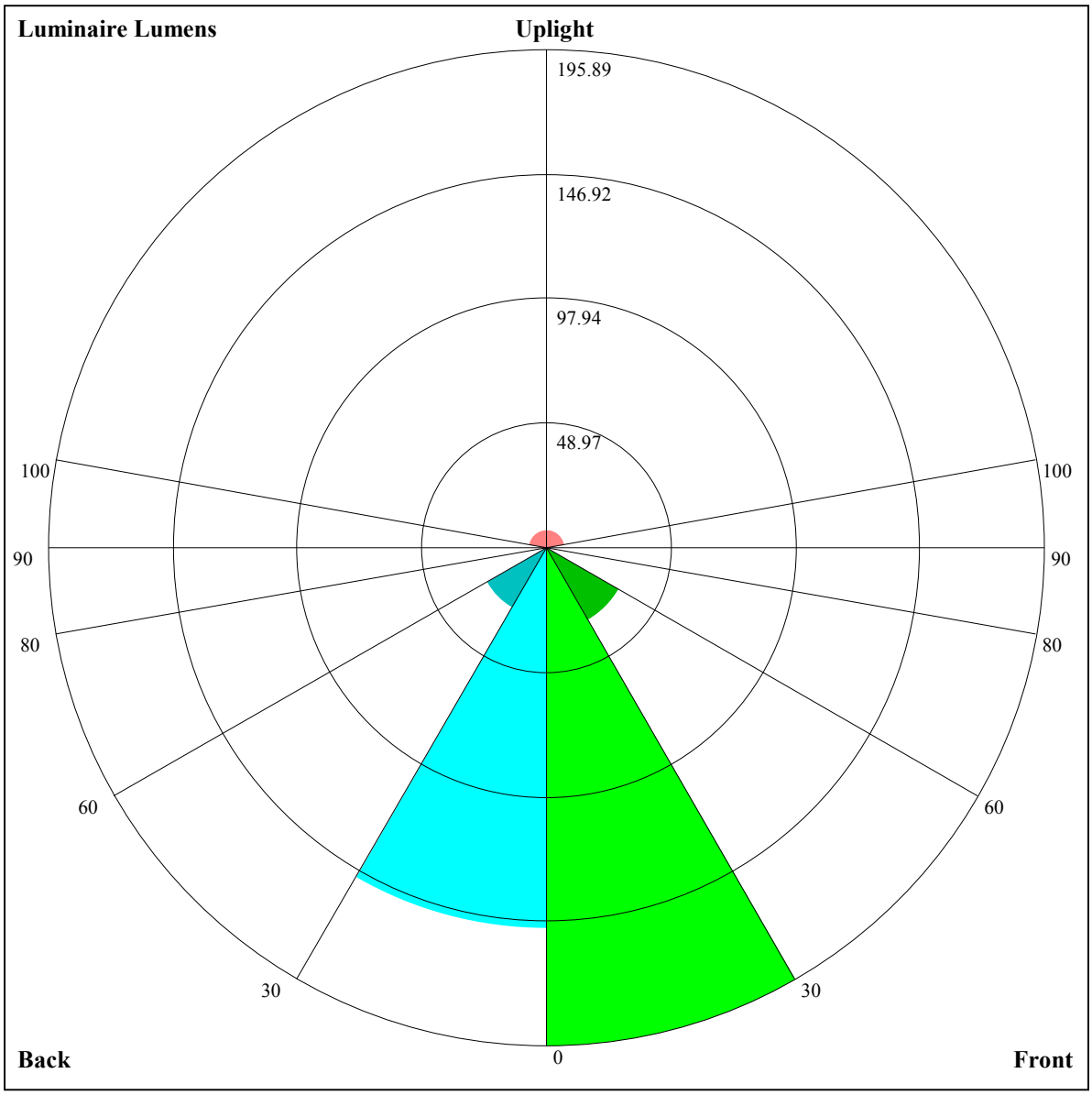


Equipment: 123
Temperature(°C): 345

Date: 2019/4/16
Humidity(%): 456%

Operator: 234

LCS Graph



Luminaire Lumens:

FL=195.89,FM=33.08,FH=1.48,FVH=0.76

BL=149.91,BM=27.59,BH=1.48,BVH=0.76

UL=1.52,UH=7.23

BUG Rating:B1-U1-G0

Intensity data(cd)

C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
0.0	9258.19	10199.25	10119.38	9164.25	7419.94	5415.19	3720.94	2223.56	1357.31
45.0	10068.19	9818.44	8783.44	6867.56	5189.06	3569.63	1982.81	1080.11	765.06
90.0	10282.50	9922.50	8633.25	6787.13	5036.63	3220.31	2000.81	1141.88	717.75
135.0	9877.50	8575.88	6438.38	4673.25	3121.31	1731.38	1042.88	654.75	428.06
180.0	9258.19	7808.63	6078.38	3943.69	2548.13	1060.99	876.49	525.60	366.98
225.0	10068.19	9374.63	7869.94	6172.88	4240.69	2642.63	1615.50	898.88	565.88
270.0	10282.50	9696.38	8452.13	6591.94	4602.94	3063.94	1902.94	983.87	600.30
315.0	9877.50	10473.75	10190.25	8763.75	7125.75	5313.38	3416.06	2029.50	1079.16
360.0	9258.19	10199.25	10119.38	9164.25	7419.94	5415.19	3720.94	2223.56	1357.31

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	792.56	500.06	360.56	288.56	226.35	201.09	186.69	178.14	173.19
45.0	510.58	341.33	269.78	228.32	199.35	183.77	176.74	172.01	168.81
90.0	439.31	322.88	285.75	218.70	191.36	180.28	174.21	169.26	166.16
135.0	308.81	290.81	208.86	190.69	179.83	174.04	170.55	167.18	164.19
180.0	272.76	223.65	199.18	183.99	176.91	172.07	168.41	165.49	163.01
225.0	373.50	285.19	228.21	200.70	183.04	176.01	171.68	167.79	165.09
270.0	403.48	285.75	236.48	206.72	187.99	178.48	173.48	169.88	167.18
315.0	702.84	445.33	328.28	257.51	220.56	196.37	183.71	177.41	173.25
360.0	792.56	500.06	360.56	288.56	226.35	201.09	186.69	178.14	173.19

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	169.88	167.06	163.91	161.55	159.36	157.11	154.97	153.11	151.09
45.0	165.77	163.01	160.71	158.23	155.87	153.90	152.04	149.74	147.99
90.0	163.52	160.99	158.57	156.49	154.35	152.38	150.64	148.73	147.04
135.0	161.78	159.36	156.66	154.63	152.61	150.47	148.44	146.64	144.68
180.0	159.98	157.61	155.48	153.00	151.20	149.40	147.21	145.58	143.89
225.0	162.62	160.20	157.84	155.76	153.56	151.76	149.85	147.94	146.31
270.0	164.42	161.94	159.92	157.56	155.48	153.73	151.99	149.85	148.28
315.0	169.20	166.50	164.14	161.27	159.13	157.11	154.97	152.89	151.20
360.0	169.88	167.06	163.91	161.55	159.36	157.11	154.97	153.11	151.09

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	149.06	147.32	145.35	143.55	141.64	139.73	137.93	135.56	133.43
45.0	146.25	144.23	142.14	140.34	138.43	136.35	134.33	132.13	129.66
90.0	145.13	143.16	141.36	139.67	137.59	135.73	133.76	131.46	126.56
135.0	142.54	140.74	138.71	136.86	134.72	132.41	130.50	120.71	90.62
180.0	141.64	140.12	138.26	135.90	134.04	131.91	128.76	113.23	85.78
225.0	144.51	142.54	140.74	139.16	136.91	134.78	132.98	130.33	110.03
270.0	146.64	144.68	142.71	141.08	139.11	136.69	134.83	132.81	120.66
315.0	149.29	147.66	145.80	143.83	142.26	140.40	138.21	136.29	134.55
360.0	149.06	147.32	145.35	143.55	141.64	139.73	137.93	135.56	133.43

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	131.29	115.71	75.32	42.98	19.07	4.78	4.44	4.16	3.71
45.0	107.04	74.64	44.61	14.18	4.89	4.56	4.28	3.66	2.19
90.0	105.53	72.62	38.36	12.15	4.95	4.61	4.22	3.77	2.19
135.0	60.92	31.05	5.79	4.44	4.22	3.88	3.26	2.08	2.03
180.0	43.43	20.14	4.84	4.16	3.88	3.49	2.81	2.03	1.91
225.0	82.35	48.94	19.52	4.73	4.22	3.88	3.43	2.70	1.97
270.0	88.82	55.07	28.13	6.58	4.22	3.94	3.54	2.98	2.03
315.0	125.61	99.06	67.61	30.21	9.17	4.56	4.28	3.88	3.49
360.0	131.29	115.71	75.32	42.98	19.07	4.78	4.44	4.16	3.71

Intensity data(cd)

C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	2.31	2.08	1.97	1.91	1.86	1.80	1.74	1.74	1.69
45.0	2.03	1.97	1.86	1.80	1.80	1.74	1.74	1.63	1.63
90.0	2.03	1.97	1.86	1.86	1.74	1.74	1.74	1.69	1.69
135.0	1.97	1.91	1.86	1.80	1.74	1.69	1.69	1.63	1.63
180.0	1.91	1.80	1.80	1.74	1.74	1.69	1.69	1.63	1.58
225.0	1.97	1.86	1.80	1.80	1.74	1.69	1.69	1.63	1.63
270.0	1.97	1.91	1.86	1.80	1.74	1.69	1.69	1.69	1.63
315.0	2.14	2.08	1.97	1.91	1.86	1.80	1.74	1.74	1.69
360.0	2.31	2.08	1.97	1.91	1.86	1.80	1.74	1.74	1.69

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	1.63	1.63	1.63	1.63	1.58	1.58	1.52	1.52	1.52
45.0	1.63	1.58	1.58	1.58	1.58	1.52	1.52	1.46	1.46
90.0	1.63	1.63	1.58	1.58	1.52	1.52	1.52	1.52	1.52
135.0	1.63	1.58	1.58	1.58	1.52	1.52	1.52	1.52	1.46
180.0	1.58	1.58	1.52	1.58	1.52	1.52	1.52	1.52	1.52
225.0	1.63	1.58	1.58	1.58	1.52	1.52	1.52	1.52	1.46
270.0	1.58	1.58	1.58	1.52	1.52	1.52	1.52	1.52	1.52
315.0	1.69	1.63	1.63	1.58	1.52	1.52	1.52	1.52	1.52
360.0	1.63	1.63	1.63	1.63	1.58	1.58	1.52	1.52	1.52

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	1.46	1.52	1.46	1.52	1.46	1.46	1.46	1.46	1.46
45.0	1.46	1.46	1.46	1.46	1.46	1.46	1.41	1.46	1.41
90.0	1.52	1.46	1.46	1.46	1.46	1.46	1.41	1.41	1.41
135.0	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.41
180.0	1.46	1.46	1.41	1.46	1.46	1.46	1.46	1.41	1.41
225.0	1.52	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.41
270.0	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46
315.0	1.52	1.52	1.46	1.46	1.46	1.46	1.41	1.41	1.41
360.0	1.46	1.52	1.46	1.52	1.46	1.46	1.46	1.46	1.46

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	1.41	1.41	1.46	1.41	1.41	1.41	1.41	1.46	1.41
45.0	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
90.0	1.41	1.46	1.41	1.41	1.41	1.41	1.41	1.41	1.41
135.0	1.41	1.41	1.46	1.41	1.41	1.41	1.41	1.41	1.41
180.0	1.46	1.46	1.41	1.41	1.41	1.41	1.41	1.41	1.41
225.0	1.41	1.41	1.41	1.46	1.41	1.41	1.41	1.41	1.41
270.0	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.35	1.41
315.0	1.46	1.46	1.46	1.41	1.41	1.41	1.41	1.41	1.41
360.0	1.41	1.41	1.46	1.41	1.41	1.41	1.41	1.46	1.41

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	1.41	1.41	1.41	1.41	1.35	1.41	1.41	1.41	1.35
45.0	1.41	1.41	1.41	1.41	1.41	1.41	1.35	1.35	1.35
90.0	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
135.0	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.35
180.0	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.35	1.41
225.0	1.41	1.41	1.35	1.41	1.41	1.41	1.35	1.35	1.41
270.0	1.41	1.41	1.41	1.35	1.41	1.41	1.41	1.41	1.35
315.0	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.35	1.41
360.0	1.41	1.41	1.41	1.41	1.35	1.41	1.41	1.41	1.35

Intensity data(cd)

C/γ(°)	90.0
0.0	1.35
45.0	1.41
90.0	1.41
135.0	1.41
180.0	1.35
225.0	1.41
270.0	1.41
315.0	1.41
360.0	1.35